

Homework

January 17, 2020

1 Lecture 11

1. Consider the problem

$$\min_{x \in Q} \{f(x) : g(x) \leq 0\}.$$

Assume that at a query point $x \in Q$ one can access the values of $g(x)$ and stochastic subgradients $\nabla f(x, \xi)$ and $\nabla g(x, \xi)$, which are unbiased. Assume also that $\|\nabla f(x, \xi)\|_* \leq M_f$, $\|\nabla g(x, \xi)\|_* \leq M_g$ a.s. in ξ . Generalize the switching subgradient scheme for this setting with general geometry and Stochastic Mirror Descent steps instead of the projected subgradient steps.